

# 12-State Survey of Needs and Interests in Continuing Education in Public Health

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**T**HE Program of Continuing Education in Public Health provides university-led post-graduate education on topics of concern to professional health workers in 12 western States. The program is a partnership of professional schools (the Schools of Public Health of the University of California at Berkeley, University of California at Los Angeles, University of Hawaii, and Loma Linda University) and professional associations (the Western Regional Office of the American Public Health Association and the Western Branch of the American Public Health Association).

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The program's part-time field faculty of more than 500 persons is drawn from faculties of sponsoring graduate schools, parent universities, and other major universities as well as from private practice, industry, and operating health and social agencies. The program brings continuing professional education near to the participants' home areas.

The tempo and variety of course offerings have greatly increased since the program fielded its first of four presentations in 1960. From 1960 through 1966, a total of 4,772 participants have attended. At the end of December 1968, 8,364 persons had participated in program offerings. Over the past 3 years an average of 39 courses per year have been presented.

To find out whether the Program of Continuing Education in Public Health was, in fact, meeting the needs of public health professionals, a survey was carried out during 1966-67.

The purpose of the survey was to determine preferences of different groups of public health professionals by soliciting expressions of interest in and needs for continuing education courses from a representative consumer sample. Indications of preferences for newly proposed techniques and methods of instruction were also sought, as well as data on the characteristics of

professional health workers in the West (age, sex, preprofessional education, professional training, length of time in the health field, position in agency, and type of employing agency).

### **Study Design**

The survey was conducted in four phases: field interviews, pretest self-administered questionnaires, mailed self-administered questionnaires, and data analysis.

Interviews were undertaken with persons in 10 western States by requesting the chairman of each State's continuing education committee (committees are composed of public health professionals who belong to the State's public health association) to select persons representing a cross section of health disciplines in his State. Persons in Alaska and Hawaii were excluded from the field interviews because of travel expense, but they were a part of the mailed questionnaire sample. Colorado, which is not a part of the confederation, was excluded except for staff of the Public Health Service in Region VIII.

One hundred interviews were conducted by the program staff and three graduate students from the School of Public Health, University of California at Berkeley. The interviews were open-ended and exploratory. Their purpose was to secure data to assist in developing a self-administered questionnaire.

Before going into the field, interviewers and program staff discussed the history and operation of the program, the purpose of the study, questions to be asked, areas to be probed, and other pertinent details. At post-interview meetings, staff and interviewers reviewed written findings and the synopsis of impressions formed by each interviewer.

Data were summarized and categorized. From this compilation, a pretest self-administered questionnaire was developed and mailed to the 100 persons originally interviewed, 100 additional professionals from the same States named by the original interviewees, and 100 persons randomly selected from the professional staff rosters of health departments located in the western region.

The pretest had two purposes: (a) to test the questions for accuracy and clarity and (b) to predict the response rate of the final survey.

The pretest response rate was 62 percent.

The final questionnaire consisted of four sections: (a) participation in continuing education, (b) variations in course presentation, (c) course offerings, and (d) background of respondents.

### **Nature of the Sample**

Due to the budgetary considerations, the study population was limited to health professionals in departments of public health and selected voluntary health agencies in 12 western States (Alaska, Hawaii, California, Washington, Oregon, Nevada, Idaho, Montana, Wyoming, Arizona, New Mexico, and Utah). Data contained in this report are limited to information collected from health professionals in official health agencies. A separate report has been prepared containing information collected from professionals in voluntary health agencies.

A professional was defined as one whose position or title or both was included in "Compensation of Full Time Professional and Technical Personnel," an annual report of the California State Department of Public Health.

Rosters of professional personnel were obtained from 12 State health departments; the then existent seven city health departments; Regional Offices VII, VIII, and IX of the Public Health Service; all county health departments serving a population of more than 250,000; and a stratified random sample of county health departments serving populations of less than 250,000.

It is estimated that approximately 10,000 professionals are employed by departments of public health in the 12 western States, about half of them in California. Returns were weighted in order to provide equivalent bases for comparison between California and non-California respondents. The study was also designed so that responses from participants in courses of the program could be compared with nonparticipants. This additional factor entered into the final determination of the sample size.

Sampling was done in the following manner: in California, every fifth name was selected from the rosters of the Federal (Region IX, Public Health Service), State, city, and county health departments serving a population of more than 250,000. In the 11 other States, every

third name was taken from the rosters of the Federal (Regions VII and VIII, Public Health Service), State, city, and county health departments according to the same population criteria.

Next, using a stratified random sample of county health departments serving populations of less than 250,000, every fifth department in California and every third department in other western States was selected. Every name was taken from the rosters of these departments. In this manner—since one-fifth of the small county departments in California and one-third of the small county departments in other western States were included—the sampling ratio of one-fifth in California and one-third in other western States was preserved.

Rosters of professional personnel were cross-checked to eliminate duplication of names and to exclude clerks, laboratory assistants, and other nonprofessionals who were included on lists received from cooperating agencies.

#### Data Collection Techniques

The self-administered questionnaire was mailed on March 31, 1967, to the 2,534 persons in the sample. A second mailing on April 30, 1967, was addressed to those whose questionnaires had not been returned. The cutoff date for data collection was June 6, 1967.

Upon return of the completed questionnaire to the University of California Survey Research Center at Berkeley, each instrument was coded and processed for direct keypunching. Tabulations were prepared employing an IBM 1620 computer. A total of 1,355 persons responded; 43 percent of these were from California, 57 percent were from the other 11 States (table 1).

#### Background of Respondents

Twenty-nine percent of the respondents (table 2) had participated in the Program of Continuing Education in Public Health (C.E.P.H.). Sixty-six percent had no formal public health training (table 3). This lack reinforces the need for increased efforts in continuing education in public health. Table 3 also shows that among persons who have no formal public health training, fewer attended continu-

ing education courses than those who have such training, suggesting that ways must be found to motivate those who may need the continuing education most.

When comparing participants with nonparticipants, the participant group had a much higher percentage of those holding a master's degree or doctorate (table 3). In terms of academic attainment, there was little difference between California and non-California respondents.

The distribution of disciplines responding appears nearly equivalent for California and the other States, as it does for C.E.P.H. participants and nonparticipants. However, physicians and nonmedical administrators have participated in the program proportionately more than other disciplines. Laboratory personnel, statisticians, and health investigators are underrepresented in the participant population (table 4).

Places of employment of respondents (Federal, State, county, city, or city-county agency) correspond on a percentage basis to places of employment for public health professionals

**Table 1. Sample drawn and return by region**

Region	Actual number in sample	Number returned	Percent returned
California.....	1, 035	583	56
Non-California.....	1, 402	772	55
Total.....	2, 437	1, 355	55

NOTE: 97 questionnaires were rejected as incomplete or returned by the post office.

**Table 2. Participation in the Program of Continuing Education in Public Health (C.E.P.H.) as reported by respondents**

Region	Totals	Percent participating in C.E.P.H.	Number participating in C.E.P.H.	Number not participating in C.E.P.H.
California.....	583	19	116	463
Non-California.....	772	36	279	483
Total.....	1, 355	29	395	946

throughout the West. The type of employing agency does not appear to be a significant factor in determining participation in the Program of Continuing Education in Public Health.

A considerably higher percentage of C.E.P.H. participants than nonparticipants are in top management positions. Those in staff posi-

tions are underrepresented as C.E.P.H. participants. This underrepresentation may be explained, in part, by the types of courses offered, since many are concerned with management and aimed at persons with administrative responsibilities. Another possible explanation may be that those in the upper echelon have more free-

**Table 3. Educational attainment and possession of a degree in public health of respondents, by region and participation in the Program of Continuing Education in Public Health, in percentages**

Level and degrees	All respondents (N=5,231) <sup>1</sup>	By region		By participation <sup>3</sup>	
		California (N=583) <sup>2</sup>	Non- California (N=772) <sup>2</sup>	C.E.P.H. (N=1,417) <sup>1</sup>	Non- C.E.P.H. (N=3,764) <sup>1</sup>
<i>Educational level attained <sup>4</sup></i>					
High school.....	1	<0. 05	2	1	1
College (no degree).....	6	5	6	5	6
Associate in arts.....	<. 05	<. 05	1	<. 05	1
Registered nurse.....	9	7	12	8	9
Registered sanitarian.....	1	2	1	1	2
Bachelor of law.....	<. 05	<. 05	1	1	<. 05
Bachelor.....	49	52	45	39	53
Master.....	19	18	21	28	16
Doctorate.....	13	14	11	17	11
<i>Degrees in public health <sup>4</sup></i>					
None.....	66	62	70	56	69
Public health nurse.....	22	24	18	21	22
Master of science in public health.....	1	1	1	2	1
Master of public health or diploma in public health.....	11	12	10	21	7
Doctor of public health.....	<. 05	<. 05	1	1	. 05
Doctor of philosophy <sup>5</sup> .....	<. 05	. 000	. 05	. 05	. 000

<sup>1</sup> Weighted—California respondents times 5, non-California times 3.

<sup>2</sup> Not weighted—actual number of respondents.

<sup>3</sup> 14 persons did not answer the question on participation.

<sup>4</sup> Percentages were carried to 3 decimal points and have been rounded to the nearest whole number; therefore totals may be 99 or 101.

<sup>5</sup> Earned or awarded by an accredited school of public health.

**Table 4. Primary professional role of respondents by region and participation, in percentages**

Profession	All respondents (N=5,321) <sup>1</sup>	By region		By participation <sup>3</sup>	
		California (N=583) <sup>2</sup>	Non-California (N=772) <sup>2</sup>	C.E.P.H. (N=1,417) <sup>1</sup>	Non-C.E.P.H. (N=3,764) <sup>1</sup>
Dentists.....	41	41	41	41	41
Physicians.....	9	11	7	15	7
Nurses.....	37	36	39	37	38
Environmentalists.....	23	23	22	23	23
Health investigators.....	3	4	3	1	4
Statisticians.....	2	3	2	1	3
Educators.....	2	3	2	3	2
Social workers.....	9	8	10	8	9
Nutritionists.....	1	1	1	1	1
Nonmedical administrators.....	5	3	8	7	4
Laboratory personnel.....	7	8	6	3	8

NOTE: See footnotes 1-4 to table 3.

**Table 5. Age, position in agency, and length of time in present post and in public health of respondents, in percentages**

Item	All respondents (N=5,231) <sup>1</sup>	By region		By participation <sup>3</sup>	
		California <sup>2</sup> (N=583)	Non-California <sup>2</sup> (N=772)	C.E.P.H. (N=1,417) <sup>1</sup>	Non-C.E.P.H. (N=3,764) <sup>1</sup>
Age, in years: <sup>4</sup>					
Under 30.....	19	22	15	7	23
30-39.....	25	24	26	21	26
40-49.....	28	27	30	32	27
50-59.....	21	20	23	32	18
60 or more.....	6	7	5	8	5
No answer.....	.05	.05	1	.05	.05
Position in agency: <sup>4</sup>					
Head of agency.....	4	3	5	8	2
Head of subunit in agency.....	13	13	14	24	9
Supervisor.....	25	22	28	32	23
Staff.....	58	62	53	36	66
Length of time in present post: <sup>4</sup>					
Less than 2 years.....	34	33	36	26	37
2 to 4 years.....	25	26	24	29	24
5 to 9 years.....	20	21	18	23	19
10 to 14 years.....	10	10	10	10	9
15 or more years.....	11	10	12	12	10
Length of time in public health: <sup>4</sup>					
Less than 2 years.....	13	12	14	5	16
2 to 4 years.....	15	16	14	12	16
5 to 9 years.....	24	26	20	18	25
10 to 14 years.....	15	15	16	19	14
15 to 19 years.....	12	11	14	13	12
20 or more years.....	21	19	22	33	16

NOTE: See footnotes 1-4 to table 3.

dom to attend courses of their choice (table 5).

C.E.P.H. participants tend to have been in their present positions longer than nonparticipants; 45 percent of them have held their jobs 5 years or longer, as compared with 38 percent of nonparticipants. This same trend is evidenced with regard to the length of time in public health; 65 percent of C.E.P.H. participants have been in public health 10 or more years, as compared with 42 percent of nonparticipants (table 5). These two factors may be a concomitant of the overrepresentation of top managers among C.E.P.H. participants.

C.E.P.H. participants as a group were somewhat older than nonparticipants, which correlates with data on length of time in public health (table 5). In comparing California with non-California respondents, there was an overall balance in age groupings. Fifty-two percent of all respondents were female; 48 percent were male. There was a 50-50 distribution of the sexes of responding C.E.P.H. participants.

More than half of the respondents (56 per-

cent) were not members of any professional public health association. Seventy percent of C.E.P.H. participants, however, were members of the American Public Health Association, their State health association, or both, but only 32 percent of the nonparticipants belonged to one or both associations. A major reason cited for not attending C.E.P.H. course offerings was that the respondent had not been notified of the availability of courses. The program staff sends those on the membership rosters of State public health associations notices of future courses. The disparity may also reflect a tendency of those who have high professional motivation both to join their professional association and to take continuing education courses.

A separate report has been prepared on membership in the APHA and its affiliates. Three factors seem to be of prime importance in determining whether a person will join his professional association—possession of a public health degree encourages membership; the longer one has been in the field, the more likely

he is to be a member; and the higher the person's position in his organization, the more likely he is to join a professional association.

### Course Offerings

In the section of the questionnaire devoted to course offerings, titles of specific courses which were already developed and ready for presentation, in development stages, or ones considered feasible for development from those suggested in the initial pretest interview stage were listed.

A total of 78 course titles were grouped into these eight general content areas: administration, chronic disease, communication and coordination, environmental health, general public health, maternal and child health, medical care organization, and mental health.

Each area had nine or 10 course topics, but because of punchcard limitations, 10 was the maximum number possible in any broad area. Each respondent was first asked if he had an interest in the area or the course listed. If not, he was instructed to proceed to the next area. If he did, he was asked to indicate his first and second choice of courses.

The respondent was also asked to suggest additional courses he would like to see offered. These suggestions are considered in developing courses.

#### *Administration*

In the subject area of administration 33 percent of the respondents selected Introduction to Administration and Decision Making as the course they would be most or second-most interested in taking. Urbanization: Its Effects on Public Health; and Research Methods: Including Use of Computers and Program Evaluation were both selected by 31 percent of participants.

Of least interest to respondents in this area were Occupational Medicine and the Law (9 percent) and Medical-Health Economics (11 percent).

In comparing C.E.P.H. participants with nonparticipants, frequency of selection was similar, except for the course Introduction to Administration and Decision Making. The course was selected less frequently by those who had attended C.E.P.H. presentations. For the course

Political Science, Public Administration, and Health Programs, the reverse was true. Many participants may have taken the Introduction to Administration course which was offered throughout the region. This fact would, of course, affect the percentage selecting the course in political science.

Respondents who were either heads of agencies or of major subunits within agencies selected Research Methods: Including Use of Computers and Program Evaluation most frequently. The choice of supervisors was Introduction to Administration and Decision Making, while for staff personnel the top choice was Urbanization: Its Effects on Public Health.

By professional category, Research Methods was the first choice of physicians, health investigators, statisticians, nutritionists, social workers, and laboratory personnel. Educators and nonmedical administrators selected Political Science as their first choice. Environmentalists chose Urbanization, while nurses and social workers picked Introduction to Administration and Decision Making.

A person's position within an agency determined to a great extent his selection of courses within this curriculum. Ninety-four percent of heads of agencies, 91 percent of deputy heads, 82 percent of supervisors, and only 57 percent of staff personnel selected specific courses in the area of administration.

Other courses listed under administration were Budget Development and Personnel Management, Executive Development, and Federal Legislation and Health Programs.

#### *Chronic Disease*

The course most frequently selected by all respondents was Epidemiology (40 percent), followed by Dangerous and Addictive Drugs (27 percent), and Multiphasic Screening for Chronic Diseases (25 percent). There was little difference between California and non-California respondents in course preference.

C.E.P.H. participants differed from nonparticipants in several course topics. Participants in the program selected as their top preferences, after Epidemiology, the following courses: Multiphasic Screening, Geriatrics: Problems of Aging, and Dangerous and Addictive Drugs. After Epidemiology, nonparticipants chose

Drugs, Alcoholism, and Multiphasic Screening, in that order.

Chronic disease was the most popular curriculum area for nurses, with only 2 percent indicating no interest in it. Multiphasic Screening was their primary course selection. The top course priority for health educators was Dangerous Drugs; for social workers, Alcoholism; for nutritionists, Quackery, Consumer Education. Epidemiology was the top course choice for physicians, environmentalists, health investigators, statisticians, nonmedical administrators, and laboratory personnel. Other courses grouped under chronic disease were Cardiovascular Disease, Chronic Respiratory Diseases, Dental Research Applied to Public Health, and Stroke-Rehabilitation.

#### *Communication and Coordination*

The curriculum area of communication and coordination grew out of the field interviews. Most courses in this category were suggested by respondents during the interviews. Eighty-three percent of all respondents selected courses in communication and coordination. Of the eight general curriculum areas, it received the second highest frequency of selection. Of the nine courses listed, Motivation and Persuasion Techniques was the first choice, with 46 percent of all respondents selecting it as their first or second preference. Next was Communications: Individual and Organizational, the choice of 33 percent. Third was Community Organization: Development and Use of Resources, a choice of 29 percent.

Californians chose Communications as their second highest priority course, and Community Organization as their third choice. Non-Californians reversed these preferences. There was little difference in selection between C.E.P.H. participants and nonparticipants.

Some interesting variations occurred when hierarchical position was the variable. For example, 18 percent of the heads of agencies selected Coping with the Legislature and Management Decisions, while only 9 percent of staff personnel chose this topic. Interdisciplinary Coordination was selected by 40 percent of the agency heads and 17 percent of staff personnel. For the course Interpersonal Relationships the reverse was true—27 percent of the staff per-

sonnel chose this topic, while only 10 percent of the agency heads expressed an interest in it.

Of those with public health degrees, 21 percent selected Coping with the Legislature and Management Decisions. This course was picked by only 11 percent of those not having public health degrees. Those with an M.P.H. followed the same trend as heads of agencies; those without public health degrees followed the trend of staff personnel.

By discipline, Motivation and Persuasion Techniques was the first choice of dentists, physicians, nurses, environmentalists, educators, and nonmedical administrators. Statisticians and laboratory personnel picked Technical and Scientific Report Writing as their first choice; social workers, Community Organization; and nutritionists, Interdisciplinary Coordination.

Other courses listed under this area were Audio-Visual Methods and Terminology for Medicine and Nursing in Public Health.

#### *Environmental Health*

Seventy-seven percent of the respondents selected course titles in the curriculum area of environmental health. Environmentalists, as might be expected, selected environmental health as their top curriculum area, with 98 percent expressing interest.

Of the four course titles most frequently selected by respondents, Air and Water Pollution: Prevention and Control was the first choice of dentists, environmentalists, health investigators, and laboratory personnel; Environmental Sociology and Anthropology was the first choice of nurses, statisticians, social workers, and nonmedical administrators; Accident and Injury Prevention and Control was the first choice of educators; and Food and Drugs was the overwhelming selection of nutritionists.

There was little difference in the choices of California and non-California respondents, the only minor exception being Housing. More Californians expressed an interest in this topic than did persons outside of California.

#### *General Public Health*

The category of general public health received the highest percentage of respondent interest. Eighty-eight percent selected courses

in this area. Like communications and coordination, the general public health curriculum grew out of the pretest field interviews and pretest self-administered questionnaires. Titles listed were a synthesis of courses suggested by most of the pretest group as needed in their daily affairs and not currently available, to their knowledge, from any other source of continuing education.

The most popular courses were Consultation: How to Use It; How to Give It and Comprehensive Health Planning. Comprehensive Health Planning ranked highest with C.E.P.H. participants. Non-Californians gave Comprehensive Health Planning a higher priority than did California respondents. It might be noted that, at the time the questionnaire was mailed out, national and regional conferences on comprehensive health planning had been convened.

A higher percentage of non-Californians chose Techniques of Health Education and Teaching than Californians. Californians, to a greater degree, chose Public Health Law and Principles, Practices and Philosophies of Public Health.

The course, Applied Behavioral Sciences and Public Health, had a high degree of selection. It was about equally popular among California and non-California respondents and C.E.P.H. participants and nonparticipants.

Comprehensive Health Planning was the top course selection for physicians and nonmedical administrators. The course in consultation received the highest priority among nurses, social workers, and nutritionists. Health investigators and educators picked Applied Behavioral Sciences and Public Health as their first choice. Statisticians chose Biostatistics for the Public Health Worker; environmentalists, Public Health Law; laboratory personnel, Current Trends in Biochemistry and Microbiology; and dentists, Techniques of Health Education and Teaching.

Comprehensive Health Planning was chosen more often by those possessing a public health degree than by those not having the degree. Hierarchically, the heads of agencies chose Comprehensive Health Planning more frequently than did those in staff positions—45 percent as

opposed to 18 percent. The reverse was true of Consultation, in which 36 percent of the staff personnel expressed an interest, as opposed to only 17 percent of heads of agencies. Techniques of Health Education and Teaching was a choice of staff—34 percent versus only 12 percent for heads of agencies. On the other hand, Principles, Practices, and Philosophies of Public Health was a choice of agency heads—32 percent versus only 19 percent of staff personnel.

### *Maternal and Child Health*

Maternal and child health did not attract as much interest among respondents as did the other general categories discussed thus far. Non-Californians chose courses from this category more frequently than did Californians, and C.E.P.H. participants had a higher response rate than did nonparticipants.

Courses receiving the most responses were Family Planning and Community Services (31 percent), Neurological Disorders in Children (24 percent), Health of the School-Age Child (24 percent), and Child Development (23 percent).

In comparing respondents by region, the course, Health of the School-Age Child, was considered more popular with non-California than with California respondents. Thirty-one percent of non-Californians chose this course title, versus only 18 percent of the Californians. More Californians than non-Californians, on the other hand, chose Child Development and Neurological Disorders in Children.

When we noted differences in priorities between C.E.P.H. participants and nonparticipants, two courses stand out. Twenty-five percent of the participants expressed an interest in Genetic Counseling, while only 16 percent of nonparticipants did. The reverse is true of Child Development, a course picked by 25 percent of the nonparticipants, as contrasted with only 16 percent of C.E.P.H. participants.

Family Planning and Community Services was the top course selection of physicians, nurses, educators, and nonmedical administrators. Migrant Health Programs was the overwhelming first choice of environmentalists and health investigators. Dentists chose Health of the School-Age Child: School Health Pro-



grams; laboratory personnel chose Genetic Counseling; social workers chose Neurological Disorders in Children; nutritionists chose Problem Areas in Nutrition; and statisticians chose Reducing Infant Morbidity and Mortality.

There seemed to be little differentiation on the basis of possession of a public health degree. Some variation did show up, in that more persons without such a degree than with one expressed interest in the course Child Development. The reverse was true for the courses Migrant Health Programs and Reducing Infant Morbidity and Mortality.

### *Medical Care Organization*

Despite exciting new developments in medical care organization, this curriculum area received a low response rate; 31 percent of the persons surveyed indicated no interest in it. Within the curriculum, preferences centered on courses dealing with regional planning of services and facilities, quality control and evaluation, public medical care, organized health care, and medical care law. Interest then dropped off sharply for the other course topics listed. There was little difference between California and non-California respondents except that non-Californians tended to select regional planning as their central concern, while Californians chose both regional planning and quality control.

In comparing responses by C.E.P.H. participants and nonparticipants, we found some minor variations; the most notable concerned the course Regional Planning of Services and Facilities. Forty-five percent of the participants selected this topic, as contrasted with only 31 percent of nonparticipants. The courses Health Manpower and Organized Health Care received higher priorities from C.E.P.H. participants than nonparticipants, while Medical Care Law received a higher frequency of selection by nonparticipants than participants.

Among heads of agencies, 92 percent selected courses in this curriculum area; among agency subunit heads, 72 percent selected courses; among supervisory personnel, 62 percent selected courses; and among staff personnel, 57 percent selected courses. Heads of agencies, deputy heads, and supervisors tended to center their selections on the two courses, Quality Con-

trol and Evaluation and Regional Planning of Services and Facilities. Staff personnel tended to spread their selection more evenly throughout all courses listed.

Neither possession of a public health degree nor length of time in public health seemed to be a deciding factor in selection of courses in this curriculum.

By discipline, Regional Planning of Health Facilities and Services was the top course selection for physicians, nurses, environmentalists, educators, social workers, and nonmedical administrators. Quality Control and Evaluation was the first preference for health investigators, statisticians (overwhelmingly), and laboratory personnel. Nutritionists chose Health Manpower, while dentists perhaps understandably, chose Dental Care. Other courses listed were Drug Control, Health Insurance, Hospital Administration, and Public Medical Care.

### *Mental Health*

There was little difference between California and non-California respondents and C.E.P.H. participants and nonparticipants in their course choices within the area of mental health. The only notable variation was that more participants (24 percent) gave priority to Comprehensive Mental Health Planning than did nonparticipants (14 percent). Courses with the highest priority from all respondents were, in order, The Multiproblem Family, Mental Health of Children and Teenagers, and Mental Health Problems of Race Relations and Poverty Populations.

With only minor variations, possession of a public health degree, length of time in the health field, and age appeared to have little influence on course selection.

When choices were examined hierarchically, four courses showed some differentiation. Persons high in their organizations tended to choose Community Psychiatry and Comprehensive Mental Health Planning more frequently than staff level persons. The reverse was true when the courses Mental Disorders of Concern to Public Health Personnel and Mental Health of Children and Teenagers were compared with position held within the agency. The course on The Multiproblem Family received the high-

est percentage of choices throughout all hierarchical levels.

The area of mental health, as determined by the percentage of course title selections, was the highest among physicians (81 percent choosing courses in this area), nurses (95 percent), and social workers (90 percent). Course selection by discipline showed that dentists picked Comprehensive Mental Health Planning as their first choice, as did nonmedical administrators. Environmentalists, educators, and laboratory personnel chose Mental Disorders of Concern to Public Health Personnel. Nurses, social workers, and nutritionists chose The Multiproblem Family; physicians, Mental Health of Children and Teenagers; statisticians, The Mental Patient in the Community; and environmentalists and health investigators, Mental Health Problems of Race Relations and Poverty Populations.

#### Interest in Areas By Discipline

Marked differences in interest in curriculum areas were shown by respondents according to the various disciplines they represented. The differences can be measured by the percent of persons selecting courses in a given curriculum area. Table 6 summarizes this information.

Physicians tended to select uniformly from all curriculum areas. Environmental health was

their lowest priority, with 70 percent selecting such courses, while mental health was their highest, with 81 percent selecting courses.

Nurses showed a relative lack of interest in only one area—administration. Only 61 percent selected courses dealing with the subject. Mental health, chronic disease, general public health, communication and coordination, and maternal and child health were all of high priority to nurses. More than 90 percent selected courses in these areas.

Environmentalists centered their interest in environmental health, with 98 percent picking course titles under this category. Their next area of priority was general public health, with an 85 percent selection factor. Less than half of them selected courses in the categories of maternal and child health, medical care organization, and mental health.

Social workers clustered their choices in mental health (90 percent), communication and coordination (85 percent), and maternal and child health (80 percent).

Nonmedical administrators chose courses with greatest frequency in these four areas: administration (96 percent), general public health (96 percent), communication and coordination (94 percent), and medical care organization (83 percent). Laboratory personnel as a group tended to select courses with less frequency than

**Table 6. Percentage of respondents selecting courses in 8 curriculum areas, by discipline**

Discipline	Number of respondents	Curriculum area							
		Administration	Communication and coordination	Chronic disease	Environmental health	General public health	Maternal and child health	Medical care organization	Mental Health
Dentists.....	52	94	88	94	73	88	85	100	79
Physicians.....	489	71	75	78	70	79	80	76	81
Nurses.....	1,953	61	91	93	75	92	91	70	95
Environmentalists.....	1,185	79	79	61	98	85	31	42	39
Health investigators.....	165	75	76	85	82	87	48	44	63
Statisticians.....	122	92	72	84	56	88	56	69	57
Educators.....	119	89	96	76	79	96	81	77	84
Social workers.....	462	64	85	73	52	77	80	55	90
Nutritionists.....	52	73	90	100	90	100	81	67	44
Nonmedical administrators.....	265	96	94	58	52	96	37	83	49
Laboratory personnel.....	367	50	62	69	79	91	36	47	45
All respondents.....	5,231	72	83	78	77	88	66	61	72

NOTE: Percentages were figured to 3 decimal points and have been rounded to the nearest whole number; therefore totals may be 99 or 101.

other disciplines. The only area receiving a substantial number of their selections was general public health (91 percent). The area of next greatest concern was environmental health, with 79 percent expressing interest.

Educators, while tending to select courses in all general curriculum areas, picked courses in communication and coordination and general public health with the greatest frequency.

Administration, general public health, and chronic disease were the most popular with statisticians. Health investigators most often selected courses under the headings of general public health, environmental health, and chronic disease. Dentists and nutritionists were represented in small numbers within the sample, and they tended to select courses in all curriculum areas. The exceptions were that nutritionists less often chose courses in mental health (only 44 percent) and medical care organization (only 67 percent).

#### New Courses

Respondents were asked to indicate any courses not mentioned in the questionnaire which they would like added to the curriculum. Suggestions obtained from that open-ended question have been excerpted and compiled and are used in course planning enterprises.

Respondents were also asked to indicate their interest in either or both of two topical areas: current national trends as they affect the health field and basic preparatory areas, such as new mathematics, symbolic logic, systems theory, and calculus. Thirty-seven percent of the respondents said that they would be interested in both areas, and 13 percent indicated no interest in either. When asked to select only one of the two areas, 40 percent chose current national trends, while only 6 percent chose new mathematics, symbolic logic, systems theory, and calculus. Four percent did not answer this question. There was no apparent difference between C.E.P.H. participants and nonparticipants or between Californians and non-Californians. Neither did there seem to be any major difference when discipline was the factor for comparison.

Respondents were then asked to suggest the maximum number of courses they would be interested in attending during a year. The ma-

jority suggested two courses per year. Again, there was little difference when participation in the program, residence, and discipline were comparison factors.

Respondents were asked to designate those curriculum areas which they believed would be the most useful for them and for other professionals in their own discipline. Table 7 summarizes this information.

There was a reasonably uniform distribution of choice among administration, communication and coordination, environmental health, general public health, and maternal and child health as selections for self. However, when asked to select courses needed by others in their disciplines, respondents were unanimous in choosing communication and coordination as the most needed area, followed by general public health.

#### Variations in Course Presentations

In one section of the questionnaire we tried to find out what respondents thought about new methods of teaching—that is, innovative techniques integrated into programs as supplementary learning experiences, augmenting current offerings in the field. A short paragraph summarizing possible alternative uses of each technique preceded the questions. Respondents were queried about the use of TV-telephone tieups, use of circuit-riding faculty, use of teaching machines, and use of programmed texts. Opinions on the desirability and usefulness of these techniques were cross-tabulated according to position, professional discipline, age, and sex of respondents.

Approximately the same response pattern was found for C.E.P.H. participants and non-participants and for Californians and non-Californians regarding use of TV-telephone tieups. There were also no significant differences in regard to position, discipline, age, or sex of respondents. Following are the opinions of all respondents about use of TV-telephone tieups:

<i>Opinion</i>	<i>Percent</i>
Definitely useful.....	35
Might be useful.....	53
Would not be useful.....	9
No reply.....	4

The responses of those who worked in rural areas and in suburban areas were checked, since

they would be the groups who might benefit most from this technique. However, their responses did not differ noticeably from the overall response.

On the use of the circuit-riding faculty, there was little variation from the total pattern among any major category. The total response indicated overwhelmingly that respondents would like to see circuit-riding faculty used, but they did not want to lose the advantage of attending meetings at central sites. The opinions and percentage of respondents on this matter follow.

<i>Opinion</i>	<i>Percent</i>
Would like meetings only at central sites----	13
Would like to see circuit-riding faculty only--	4
Introduce circuit-riding faculty, but keep central meeting sites-----	78
No reply-----	5

In cross-tabulations no major change emerged from the overall pattern.

Programed learning techniques have been suggested as supplemental aids to courses offered in the field. The Program of Continuing Education in Public Health has invested time and effort in research, development, and the introduction into its presentations of teaching machine units and programed texts. This survey afforded an opportunity for potential consumers to indi-

cate receptivity to these techniques and express opinions on how they might best be used.

Answers indicated that there is resistance to both these methods. Thirty-one percent of respondents indicated that teaching machines were not useful or did not reply. Nineteen percent saw programed texts as not useful or did not reply.

Preferences for when to use techniques were evenly distributed over before, during, or after a seminar. There was, however, a slight difference expressed in the sequence in which the two techniques might ideally be used. Respondents felt that teaching machines can best be employed in post-seminar reviews and that a programed text can be employed more appropriately in pre-seminar preparation.

In cross-tabulating disciplines, it was found that the range of resistance to teaching machines varied from a low of 12 percent for nutritionists to a high of 46 percent for social workers. The median was 29 percent, represented by environmentalists. Physicians, nurses, health investigators, and laboratory personnel were more resistant to the technique than were statisticians, educators, and nonmedical administrators.

Respondents were less resistant to programed

**Table 7. Curriculum areas selected as most useful for self and for others in same discipline, in percentages**

Curriculum area	All respon- dents (N=5,231) <sup>1</sup>	By region		By participation <sup>3</sup>	
		California (N=583) <sup>2</sup>	Non- California (N=772) <sup>2</sup>	C.E.P.H. (N=1,417) <sup>1</sup>	Non- C.E.P.H. (N=3,764) <sup>1</sup>

  

Most useful for self: <sup>4</sup>					
Administration.....	18	15	21	25	15
Chronic disease.....	6	7	6	5	7
Communication and coordination.....	17	16	18	21	15
Environmental health.....	18	19	16	15	19
General public health.....	14	15	13	10	16
Maternal and child health.....	12	13	11	9	13
Medical care organization.....	3	4	3	5	3
Mental health.....	9	10	9	8	10
No answer.....	2	2	3	1	3
Most useful for others: <sup>4</sup>					
Administration.....	9	8	9	11	8
Chronic disease.....	5	6	5	5	5
Communication and coordination.....	28	26	30	33	26
Environmental health.....	14	14	12	11	15
General public health.....	19	19	19	18	20
Maternal and child health.....	6	6	6	6	6
Medical care organization.....	4	4	4	4	4
Mental health.....	8	9	7	7	9
No answer.....	7	7	7	5	7

NOTE: See footnotes 1-4 to table 3.

texts. Those indicating they regarded the technique as not useful ranged from 6 percent of nutritionists to 31 percent of social workers. The median was 18 percent, as represented by nurses and statisticians. Educators were the only group to maintain a consistent percentage of resistance to both techniques—25 percent to each.

Age did not appear to be a factor in determining responses to either technique, except that 35 percent of those 65 and over were resistant to programed texts, as compared with 20 percent of those in other age groups. There was no difference with regard to teaching machines.

Persons with a high school education indicated the greatest resistance to both techniques, although there is a distinct possibility that they may not have understood the techniques; 43 percent did not answer the question on teaching machines and 33 percent did not answer the question on programed texts. Respondents with more education had a response rate of 85 percent or more to both questions.

Cross tabulation for other factors showed no unusual variances with the possible exception that staff personnel were more accepting than heads of agencies. Eighty-two percent of staff compared to 64 percent of agency heads accepted teaching machines, and 80 percent of staff, compared to 76 percent of agency heads, accepted programed texts.

### **Single or Multidiscipline Seminars**

Respondents were asked to indicate their preference for seminars geared to single or multidisciplinary groups. Forty-three percent favored the multidiscipline groups, 37 percent, single discipline seminars, and 18 percent showed no preference. C.E.P.H. participants preferred multidisciplinary to single discipline seminars by a margin of 55 percent to 27 percent, whereas nonparticipants in the program reversed the preference—41 percent to 38 percent in favor of single discipline groups.

Among the various professions, laboratory personnel favored single over multidisciplinary seminars, 59 percent to 21 percent; sanitarians, 44 percent to 38 percent; and dentists, 54 percent to 46 percent. These were the only groups that preferred courses restricted to their own field. All other professions showed a preference for multidisciplinary seminars, although ap-

proximately 30 percent of the respondents in each discipline preferred seminars designed for their own discipline.

In comparing educational attainment with this response, we found that those who had a high school education showed a preference for single discipline seminars, 50 percent to 21 percent. Those who had registered sanitarian certification, but no degree, showed a similar preference—52 percent to 31 percent.

### **Participation in C.E.P.H.**

Persons in the survey had an opportunity to indicate how much contact, if any, they had had with the Program of Continuing Education in Public Health and what contact they had had with other sources of continuing education.

Twenty-nine percent of the respondents stated that they had participated in C.E.P.H. courses. The percentage of those attending was higher (36 percent) for those outside of California than for Californians (19 percent). By discipline, participation was highest among physicians (44 percent) and lowest among statisticians (7 percent). For other disciplines, participation was 38 percent of the nonmedical administrators, 37 percent of educators, 27 percent of dentists, 24 percent of environmentalists, nurses, and social workers, 17 percent of nutritionists, 13 percent of laboratory personnel, and 10 percent of health investigators.

Some factors which seem to influence participation in the program, or at least the opportunity to participate, were length of time in public health, position within their agency, and possession of a degree in public health. Forty-four percent of respondents had participated during 1966; 31 percent in 1967 and 12 percent in 1965.

Those in the sample were asked to indicate the number of C.E.P.H. courses they had attended during the period 1961–66. The responses indicated that the program is reaching a reasonably broad range of persons rather than a narrow group of seminar attendees.

Respondents who had not attended C.E.P.H. courses were asked to check the chief reason or reasons which prevented their attendance. Lack of notification of courses was the principal one given. This reason is undoubtedly valid, since courses are announced primarily

in mailings by the State public health associations to their membership, and a majority of respondents did not belong to their State association.

Finally, all respondents were asked to indicate the most important and next most important reasons other people did not attend courses presented by the program. The reason checked most frequently was that employers felt they could not afford to give time off from work. Other reasons mentioned in order of declining frequency were lack of notification of courses, heavy workloads, and lack of recognition of employee participation by the employing agency.

### **Implications for Planning and Study**

One outcome of the survey has been approval by the faculty advisory committee and development by the program of the following courses:

1. Community Organization
2. Advanced Series in Comprehensive Health Planning
3. Advanced Series in Environmental Health
4. Consultation: How to Use It: How to Give it
5. Mental Health in Rural Areas
6. Dangerous and Addictive Drugs
7. Mental Health of Teenagers
8. Advanced Course on Planning for Comprehensive Health Planning
9. Program Evaluation
10. Courses Dealing with Problems of Infants and Children

The first seven courses on the list have already been given and were positively received. Appropriate content subcommittees of the faculty advisory committee are undertaking further course development. Because of the need and demand expressed selected courses, such as the administration series, communication, and family planning, are being repeated in the States or offered on a regional basis or both. Also, State continuing education committees have planned their annual course scheduling in light of the study findings.

Based on the widespread acceptance of TV and video tapes to supplement continuing education courses, the program has intensified efforts to use these methods. A 14-video tape series on Drug Use and Abuse and tapes on Comprehensive Health Planning have been developed and used.

Methods to recruit participants are being

reevaluated by the continuing education committee of each State. Reliance on mailings to association members is not effective since the majority of professionals do not belong to their State associations. A more basic reason for the ineffectiveness of the mailings is that the scope of public health is broadening to those in social planning, welfare, and mental health agencies, who are involved both in course planning and as participants.

In selecting courses to develop and in recruiting participants, greater attention must be paid to the job levels of potential participant-students. Parallel curriculums have been developed, one for staff level and another for management level persons.

Follow-on studies are being planned. These will attempt to identify both the individual and organizational motivational factors which determine whether a person participates in continuing education. One in-depth study in California was recently concluded (1). And at least one school of public health in the West is reviewing these studies and others to assist its faculty in planning curriculum modifications.

### **Summary**

The Program of Continuing Education in Public Health surveyed public health professionals in 13 western States in 1967. A mailed questionnaire was used to determine needs and interests in continuing education. The 1,355 respondents (53 percent of the 2,534 persons in the sample) made two choices from a list of 78 courses grouped into eight broad categories.

Twenty percent or more of all respondents chose the following course topics: Motivation and Persuasion Techniques for Use With the Legislature, the Professional, the Public—38 percent; Epidemiology—31 percent; Air and Water Pollution: Prevention and Control—30 percent; Environmental Sociology and Anthropology—30 percent; Consultation: How To Use It: How To Give It—30 percent; Communications: Individual and Organizational—27 percent; The Multiproblem Family—27 percent; Community Organization: Development and Use of Resources—24 percent; Comprehensive Health Planning—24 percent; Introduction to Administration and Decision Making—23 per-

cent; Applied Behavioral Sciences and Public Health—23 percent; Techniques of Health Education and Teaching—23 percent; Mental Health of Children and Teenagers—23 percent; Urbanization: Its Effects on Public Health—22 percent; Research Methods: Including Use of Computers, Program Evaluation—22 percent; Dangerous and Addictive Drugs—21 percent; Multiphasic Screening for Chronic Diseases—20 percent; Accident and Injury: Prevention and Control—20 percent; Family Planning and Community Services—20 percent.

Survey data indicated that public health professionals are concerned with general problems, not specific diseases or narrow subjects, and with acquiring skills to increase their capacity for solving organizational and community problems. The majority preferred courses designed for multidisciplinary audiences, but 30 percent of those in all disciplines and at all organizational levels preferred single discipline courses.

Respondents overwhelmingly favored use of TV video tapes and telephone tieups as a supplement to continuing education. They were resistant to the use of teaching machines; how-

ever, a high percentage did not answer this question and may therefore be unfamiliar with the machines.

Primary reasons for not taking courses were not receiving notification of the courses, lack of recognition by their agency, and heavy workloads. The choice of courses depended greatly on the respondents' administrative level within their agencies.

Those who had taken previous courses of the Program of Continuing Education in Public Health have been in public health longer, hold higher positions in their agencies, are older, have more advanced degrees, and are more likely to be members of the American Public Health Association or their State public health association than nonparticipants in courses. Sixty-six percent of those in full-time professional positions did not possess a degree in public health.

#### REFERENCE

- (1) Carlaw, R. W., Hellman, S., and Paillette, G. N.: The organization and continuing education. American Public Health Association Western Regional Office, San Francisco, 1969.

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## Dr. Egeberg, Assistant Secretary for Health and Scientific Affairs

DR. ROGER OLAF EGERBERG, former dean of medicine at the University of Southern California School of Medicine, is the new Assistant Secretary for Health and Scientific Affairs, Department of Health, Education, and Welfare.

Dr. Egeberg was clinical professor of medicine at the University of California at Los Angeles from 1948 to 1964 and professor of medicine at the University of Southern California from 1956 until he was named dean of the School of Medicine in 1964.

After graduating from Cornell University in 1925, he received his M.D. in 1929 from the Northwestern University School of Medicine. He interned at Wesley Hospital in Chicago and completed his residency in internal medicine at the University of Michigan Hospital in Ann Arbor in 1932.

Dr. Egeberg practiced internal medicine in Cleveland for 10 years. He served in the U.S. Army Medical Corps from 1942 to 1946, spending the period from 1944 to 1945 as personal physician and aide-de-camp to Gen. Douglas MacArthur.

From 1946 to 1956, Dr. Egeberg was chief of Medical Services at the Veterans Administration Hospital in Los Angeles. He was medical director of the Los Angeles County Hospital from 1956 to 1958.

The new Assistant Secretary for Health and Scientific Affairs has served on numerous State and Federal medical advisory boards and commissions, including the President's Panel on Narcotic Addiction (1962) and the President's Advisory Commission on Narcotic and Drug Abuse (1963). From 1964 to 1967, he was a member of the National Advisory Cancer Council. He was chairman of the Governor's Committee for the Study of Medical Care and Health in California from 1959 to 1960.

Dr. Egeberg is a diplomate of the American Board of Internal Medicine, a fellow of the American College of Physicians, and a member of the American Clinical and Climatological Association, California Society of Internal Medicine, American Medical Association, California-Los Angeles Medical Association, and Alpha Omega Alpha.

# Education Notes

**Applied Epidemiology for Physicians.** A course in applied epidemiology for physicians will be offered at the National Communicable Disease Center, Public Health Service, Atlanta, Ga., November 17-21, 1969.

The course, part of the Center's continuing education program, is directed to physicians who investigate disease outbreaks or who have administrative responsibility for such investigations. A refresher for experienced health administrators and an introductory medium for physicians new to public health, the course is designed to show how epidemiologic techniques can be used in disease prevention.

Although the course will include lecture-discussion sessions, emphasis will be placed on group participation obtained through the use of group solution of epidemiologic problems, seminar-type presentations, and panel discussions. Audiovisual aids are used in the presentations.

Registrants will be expected to attend all sessions. Additional information and application forms may be obtained from the National Communicable Disease Center, Atlanta, Ga. 30333. Attention: Medical Training Officer, Health Services Branch, Training Program.

**Public Health and Medical Aspects of Chemical and Biological Defense.** A 5-day course in public health and medical aspects of chemical and biological defense will be offered by the Public Health Service and the Army Chemical Center and School, Fort McClellan, Ala. Classes are scheduled at the Army Center October 13-17, 1969, and February 9-13, and May 11-15, 1970.

The course includes detailed instruction in current capabilities in chemical and biological agents and munitions systems; defensive techniques, including planning, organization, materiel, and defensive operations; public health aspects of chemical and biological operations; detection and identification of chemical and biological agents; survey and deline-

ation of contaminated chemical areas; decontamination materials and techniques; first aid for chemical casualties; treatment for biological casualties; care and use of defensive equipment; and psychological aspects of chemical and biological weapons systems.

Representatives of State or local health departments, the Veterans' Administration, or the Public Health Service; faculty members of affiliated schools in the Medical Education for the National Defense Program; and persons holding positions in which knowledge of chemical and biological defense would be useful are eligible. Security clearance of students is not required.

Additional information is available from the Deputy Chief, Training Branch, Division of Emergency Health Services, Public Health Service, 6935 Wisconsin Avenue, Chevy Chase, Md. 20015.

**Health Planning.** The University of Michigan's first broad-scale professional training program in health planning will be offered to about 10 graduate students the fall of 1969.

The 2-year curriculum will include social sciences, operations research, statistics, public health, and planning techniques. Problems of poverty, housing, race relations, manpower, and economic development will also be considered.

Stipends are available upon arrangement with the School of Public Health. A bachelor's degree from an accredited college is required.

Additional information is available from Dr. Myron E. Wegman, Dean, School of Public Health, University of Michigan, Ann Arbor, Mich. 48104.

**Graduate Program in Public Health Nutrition.** Tulane University School of Public Health and Tropical Medicine will begin a graduate program in public health nutrition at both the master's and doctoral levels in September 1969. Degrees will be tailored to the individual candidate's background and interests.



The master of public health, master of science in hygiene, doctor of public health, and doctor of science in hygiene degrees in nutrition are available. Master of science and doctor of philosophy degrees are available through the graduate school in basic science disciplines related to nutrition.

A limited number of stipends are available in accordance with standard fellowship allowances of the National Institutes of Health, Public Health Service. The program is approved for Veterans' Administration educational benefits.

Additional information is available from Dr. Patrick M. Morgan, Tulane University School of Public Health and Tropical Medicine, 1430 Tulane Ave., New Orleans, La. 70112.

**Residency in General Preventive Medicine.** A new residency training program in general preventive medicine is being started by the University of Michigan School of Public Health.

The 3-year program, approved as meeting the requirements of the American Board of Preventive Medicine, will prepare physicians for administrative, research, and teaching careers.

Most first-year residents probably will enroll in the master of public health program. Physicians already holding an M.P.H. degree or its equivalent may be admitted directly into the second year of residency training.

The program will permit specialization in epidemiology, maternal and child health, medical care administration, industrial health, population planning, or public health administration and may include completion of requirements for the doctor of public health degree.

Additional information is available from Dr. Myron E. Wegman, Dean, School of Public Health, University of Michigan, Ann Arbor, Mich. 48104.

**Principles of Epidemiology.** The Training Program of the National Communicable Disease Center, Public Health Service, will conduct a multidisciplinary course in epidemiology, January 19-23, 1970, as part of the continuing education program.

The course is designed to provide public health workers with a basic understanding of the use of epidemiologic techniques in disease prevention. It is offered for physicians, dentists, veterinarians, nurses, laboratory workers, environmental health personnel, and other members of the public health team.

Participants will be admitted on the basis of pro-

fessional education and experience and current responsibility in public health programs. Preference will be given to applicants whose professional tasks involve application of epidemiologic procedures.

Further information and application forms may be obtained from the National Communicable Disease Center, Atlanta, Ga. 30333, Attention: Medical Training Officer, Training Program.

**Courses for Physicians in Maternal and Child Health.** The University of California School of Public Health at Berkeley offers six postgraduate programs of study for physicians, primarily pediatricians and obstetricians. Each curriculum leads to the master of public health degree.

*Maternal and child health* is a 9-month program in planning, organizing, operating, and evaluating community health programs for mothers and children.

*School health* is a 9-month program in providing health services for children and adolescents of school age.

*Handicapped children, including mental retardation and learning disorders* is a 21-month program combining clinical and community training in the diagnosis, treatment, rehabilitation, and management of handicapped children and youth.

*Career development program in community pediatrics* requires 36 months and includes 2 years of pediatric residency training and 1 year of training in maternal and child health. This program meets the training requirements for certification by the American Board of Pediatrics.

*Maternal and child health—family planning* is a 9-month program on planning, organizing, operating, and evaluating health services for mothers and children, with emphasis on family planning. The course is designed primarily for obstetricians.

*Career development program in maternal health* combines a clinical residency in obstetrics and gynecology at the University of California Medical School with training in maternal and child health and family planning at the School of Public Health.

Tax-exempt fellowships are available from the Public Health Service and the Children's Bureau. Applications are being received for admissions beginning July or September 1970.

Further information is available from Helen M. Wallace, M.D., Professor and Chairman, Division of Maternal and Child Health, University of California School of Public Health, Berkeley, Calif., 94720.



### **Guidelines to Radiological Health.**

*PHS Publication No. 999-RH-33; September 1968; 174 pages.* Presents a report of the International Conference on Guidelines to Radiological Health, held at McGill University, Montreal, Quebec, Canada, August 1967, and sponsored by the Public Health Service's Bureau of Radiological Health and the Department of National Health and Welfare, Radiation Protection Division, Ottawa, Canada. Contains the texts of the discussions on radiological health problems as presented by a group of experts. Speakers from the United States, Canada, Great Britain, and Japan presented papers on radiation injury, preventive measures, and sources of radiation and epidemiology. These included the fields of diagnostic and therapeutic radiation, industrial exposure to radiation, changes induced by irradiation of nutritional elements, and radioecological concentration processes.

**Mental and Emotional Illnesses in the Young Child.** *PHS Publication No. 1877; by Bertram S. Brown; 1969; 12 pages; 25 cents.* Presents an illustrated guide for parents to antisocial behavior in children. Discusses, in a general way, some of the mental and emotional illnesses which may beset children from infancy through adolescence. Also discusses the essentials—including affection, security, a feeling of personal significance—a child needs to mature in a healthy way.

**Georgia Radium Management Project.** *PHS Publication No. 999-RH-34; January 1969; 70 pages.* The Georgia Radium Management Project, a joint effort of the Radiological Health Service, Georgia Health Department, and the Radioactive Materials Section, Division of Radiological Health (presently Radioactive Materials and Nuclear Medicine

Branch, Division of Medical Radiation Exposure, Bureau of Radiological Health), determined the extent of the use of radium in medicine and the radiological health problems existing as a result of this use. Basically, the investigation concerned an assessment of (a) the extent and types of radium usage in the practice of medicine, (b) adequacy of radiation safety procedures and equipment employed in handling, storing, and using radium sources, (c) leakage of radium sources, and (d) contamination resulting from use of radium in medicine. Phase I of the project surveyed the hospitals of Georgia, and Phase II surveyed medical offices and clinics. Radiological health practices related to the use of radium in most of the hospitals were below acceptable standards. General and specific findings for radiological health practices in medical offices and clinics are presented. Hospitals, medical offices, and clinics were generally unaware of radium contamination insurance. A study of radium contamination insurance is included.

### **Statistics From the National Health Survey**

**COMPARISON OF CLASSIFICATION OF PLACE OF RESIDENCE ON DEATH CERTIFICATES AND MATCHING CENSUS RECORDS, United States, May–August 1960.** *PHS Publication No. 1000, Series 2, No. 30; January 1969; 60 pages; 60 cents.*

**PSEUDOREPLICATION.** Further evaluation and application of the balanced half-sample technique. *PHS Publication No. 1000, Series 2, No. 31; January 1969; 24 pages; 35 cents.*

**METHODS FOR MEASURING POPULATION CHANGE.** A systems analysis summary. *PHS Publication No. 1000, Series 2, No. 32; March 1969; 18 pages; 30 cents.*

**INFANT LOSS IN THE NETHERLANDS.** *PHS Publication No. 1000, Series 3, No. 11; August 1968; 63 pages; 50 cents.*

**THE 1970 CENSUS AND VITAL AND HEALTH STATISTICS.** A study group of the Public Health Conference on Records and Statistics. *PHS Publication No. 1000, Series 4, No. 10; 14 pages; 30 cents.*

**PERSONS HOSPITALIZED,** by number of hospital episodes and days in a year, United States, July 1965–June 1966. *PHS Publication No. 1000, Series 10, No. 50; February 1969; 51 pages; 55 cents.*

**CHRONIC CONDITIONS CAUSING ACTIVITY LIMITATION,** United States, July 1963–June 1965. *PHS Publication No. 1000, Series 10, No. 51; February 1969; 48 pages; 50 cents.*

**HEARING STATUS AND EAR EXAMINATION.** Findings among adults, United States, 1960–1962. *PHS Publication No. 1000, Series 11, No. 32; November 1968; 28 pages; 35 cents.*

**USE OF SPECIAL AIDS IN HOMES FOR THE AGED AND CHRONICALLY ILL,** United States, May–June 1964. *PHS Publication No. 1000, Series 12, No. 11; December 1968; 27 pages; 40 cents.*

**PATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS,** by size and type of ownership, United States, 1965. *PHS Publication No. 1000, Series 13, No. 4; December 1968; 29 pages; 40 cents.*

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This section carries announcements of new publications prepared by the Public Health Service and of selected publications prepared with Federal support.

Unless otherwise indicated, publications for which prices are quoted are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington, D.C. 20201.

The Public Health Service does not supply publications other than its own.

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**AXNICK, NORMAN W.** (National Communicable Disease Center), **SHAVELL, STEVEN M.**, and **WITTE, JOHN J.**: *Benefits due to immunization against measles. Public Health Reports, Vol. 84, August 1969, pp. 673-680.*

The immunization effort against measles in the United States was initiated in 1963. It has resulted in a sharp decrease in incidence of the disease—from 4 million cases in 1963 to one quarter of a million cases in 1968—and in associated costs.

A study by researchers of the National Communicable Disease Center shows that during the years 1963 through 1968 the immunization effort is estimated to have averted 9.7 million acute cases of measles and 3,244 cases of mental retardation. It also

is estimated to have saved 973 lives, 555,000 hospital days, 291,000 years of normal life, more than 1.6 million workdays, 32 million schooldays, and \$423 million.

About nine-tenths of the savings in each of these categories has been realized in the last 3 years—the period of intensive national effort to eradicate measles.

**SCHLAFMAN, IRVING H.** (Public Health Service): *Health systems research to deliver comprehensive services to Indians. Public Health Reports, Vol. 84, August 1969, pp. 697-704.*

Since 1955 the Indian Health Service has been responsible for the management of a comprehensive program for individual and community health to elevate the health status of 400,000 geographically and culturally isolated American Indians and Alaskan Natives to the highest possible level.

The service is committed to carrying out its responsibilities through judicious allocation of scarce human and physical resources, in concert with the wishes and requirements of the Indian people themselves. The service has established the Health Program Systems Center at Tucson,

Ariz., to develop, test, refine, and demonstrate optimal and alternative ways of planning, implementing, and monitoring comprehensive health services for a discrete population group—namely 8,000 Papago and other Indians residing on, and adjacent to the Papago Reservation.

A multidisciplinary staff is using diversified methods in operations research and systems analysis to develop objective descriptions of health services delivery problems and priorities, to design concepts of alternative improvements, to test and refine such improvements, and to demon-

strate their efficacy and service-wide feasibility.

After documenting demographic, environmental, and sociocultural baseline data concerning the sample population, the center is developing and analyzing quantitative models of selected components of the delivery system to predict changes in the community's health status when a specified program is systematically administered or altered. In addition, the center is designing a computerized management information system to serve the operational and research needs of the comprehensive health delivery system under study. This system, in prototype form, is scheduled to be in use by the fall of 1969.

**SALISBURY, ARTHUR J.** (Massachusetts Committee on Children and Youth), and **BERG, ROBERT B.**: *Health defects and need for treatment of adolescents in low income families. Public Health Reports, Vol. 84, August 1969, pp. 705-711.*

Adolescents in a summer work program in Boston, Mass., were given physical examinations in July 1966. Examinations of 618 of the 623 children, 14-16 years old, were completed. Families of 264 children received public assistance through Aid to Families with Dependent Children; the families of all children, however, had incomes low enough to qualify for programs of the Office of Economic Opportunity.

The prevalence of major and minor physical abnormalities and of severe dental disease was determined. In addition, physical abnormalities were classified according to the adequacy or inadequacy of their treat-

ment. The prevalence of severe dental disease and of physical abnormalities was analyzed by sex, usual source of care, presence of a financial barrier, and adequacy of treatment.

A total of 373 physical abnormalities were observed in 294 or 47.5 percent of the children. Of these, 99 were classified as major, such as poor vision, diastolic heart murmur, and hypertension, and 274 as minor, for example, some hearing deficiency, moderate obesity, and systolic murmur without other observations of heart disease. Fifty-two percent of the major and 34 percent of the minor abnormalities were judged to have been treated inadequately.

Twenty-nine percent of the children required extensive dental treatment, and a large but undetermined number of the other 71 percent were not free of dental disease.

Major abnormalities were observed with significantly greater frequency among boys than among girls, but the reverse was true of minor abnormalities. Inadequacy of treatment of all abnormalities was significantly greater among boys as was the prevalence of severe dental disease.

Severe dental disease was observed less frequently in those children whose usual source of care was a dentist in private practice. The adequacy of treatment of medical abnormalities is not predictable by the source of care.

The absence of a preexisting financial barrier does not favorably affect the health of these children.

**PIETKIEWICZ, K.** (Polish National Salmonella Center), and **BUCZOWSKI, Z.:** *Salmonellosis in man in Poland, 1957-66. Public Health Reports, Vol 84, August 1969, pp. 712-720.*

Detailed data were assembled and studied on the *Salmonella* infections diagnosed in 33,640 ill and 18,821 symptomless persons in Poland over the 10-year period 1957-66. The percent of isolations of individual serotypes from persons who became ill in relation to total isolations of the serotype from both the sick and well revealed the role of each serotype in causing symptomatic infections during this period.

The proportion of *Salmonella* food poisoning outbreaks in Poland caused by *Salmonella typhimurium*

remained fairly constant over the years 1957-66, as well as over the preceding 10 years, as did the proportion of outbreaks caused by *Salmonella enteritidis*. *S. typhimurium* caused 15.0 percent of the outbreaks in the earlier period and 13.1 percent in the period under study. However, in the years 1962-66, the proportion of *S. enteritidis* infections increased several times in relation to the total number of *Salmonella* infections. These results suggest that a different mechanism is involved in the spread of *S. enteritidis* infec-

tions from that operating in the spread of infections caused by other *Salmonella*.

The percentage of symptomatic infections caused by a given serotype in relation to the total infections, both symptomatic and asymptomatic, that the serotype has caused might serve as a basis for rating the degree of pathogenicity of individual serotypes. By this hypothesis, *S. enteritidis*, which caused illness in 89.4 percent of the persons in Poland it infected in the period 1957-66, would be ranked as most pathogenic of the serotypes studied; *Salmonella give*, which caused illness in 6.7 percent of those infected, would be ranked as least pathogenic.

**ROSNER, LESTER J.** (Bernard M. Baruch College, City University of New York), **PITKIN, OLIVE E., McFADDEN, GRACE M., ROSENBLUTH, LUCILLE, and O'BRIEN, MARGARET J.:** *Better use of health professionals in New York City schools: summary of the final report on the school health personnel utilization project. Public Health Reports, Vol. 84, August 1969, pp. 729-735.*

In phase 2 of New York City's school health personnel utilization project, activities of school health teams in 107 experimental schools in three health districts were compared with those of conventionally organized personnel in 150 control schools in different districts. The demonstration ran from January through December 1966.

Findings on the activities of professionals in the control group in phase 2 were remarkably similar to findings in phase 1. In phase 2, 68 percent of nursing time in the experimental schools was devoted to professional activities as compared with 55 percent for nurses in the schools studied in phase 1.

The phase 2 experiment succeeded in developing a unique function for the public health nurse-team leaders which was more suited to their level of training than their former tasks. Public health nurses showed a dramatic improvement in personnel utilization patterns. In the experimental schools they spent 72 percent of their time on professional activities as compared with 56 percent on professional work in phase 1.

In the experimental schools, 33 percent of all health staff's time was spent on direct services to children as compared with 31 percent in the control schools. Staff nurses, freed from routine duties, were asked to perform nursing duties at a profes-

sional level but within the limitations of their academic preparation. Public health assistants' traditional clerical duties were expanded to include technical duties, special case-loads, and aid to physicians at medical sessions without a nurse.

In the experimental schools, nurses spent 46.3 percent of their time on direct services to children as compared with 40.6 percent in the control schools. Nurses in the experimental schools spent only 21 percent of their time on subprofessional activities compared with 31 percent for those in the control schools.

There was a reduction in the work units completed per staffing hour in the experimental schools compared with the control schools. In the control schools 56 percent of the children listed as new patients were placed under satisfactory care, while in the experimental schools, 68.9 percent of the new patients were so placed.